

ABSTRACT

Solar concentrator system(s) that include parabolic Total Reflection Reflectors with corrected Curved Rectangular Total Reflection Prisms are provided. The corrected Curved Rectangular Total Reflection Prisms remove optical imperfections of diffusion typically present at
5 conventional rectangular prisms of conventional parabolic and paraboloid TRR, and enable accurate focusing and high concentration ratios. A variation of the corrected Curved Rectangular Total Reflection Prisms allows the construction of a corrected solar wave guide with total reflection walls (Solar Artery), which enables the removal of the diffusion (and losses) typically present at conventional Hollow Solar Wave Guides, and increase by one or more orders of
10 magnitude the light-propagation range of Solar Arteries for the same level of losses. The solar concentrator system(s) can enable production of both thermal and electric power, and delivery of solar radiation to the interior of a building for replacement of artificial lighting with solar lighting.